Home work 1

① Choose 2 students
250 students

Solution ⟹ Combinations
$= \frac{n!}{r!(n-r)!} = \frac{250!}{2!248!}$

② three o's, two 1's

Solution ⟹ $3 \times 2 = 6$

③ Length 5
start and end with 1's

Solution ⟹ $1 \times 2 \times 2 \times 2 \times 1 = 8$

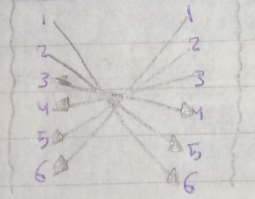
④ 3 awards
30 Players

Solution ⟹ Permutation $= \frac{n!}{(n-r)!} = \frac{30!}{(30-3)!} = 24360$

⑤ 3 books
6 Solution

Solution ⟹ Combinations
$= \frac{n!}{r!(n-r)!} = \frac{6!}{3!3!} = 20$

⑥ Complement rule
= P(event)
= 1 - P(event not)
P(7) = 1 - P(7 not)



$S = 6^2 = 36$
roll 7 = 6
$\frac{6}{36} = \frac{1}{6}$
not roll 7 = $\frac{6}{6}$
$P(\text{not } 7) = \frac{5}{6} * \frac{5}{6} * \frac{5}{6} = \frac{125}{216}$
$P(7) = 1 - \frac{125}{216}$

⑦ 3 books
6 Solution

If there are 2 books that should not both be chosen together?

Solution

Combinations $= \frac{n!}{r!(n-r)!} = \frac{6!}{2!4!} = 15$

⑧ Class → 25 Students

2 Students "Ahmed"

2 Students "Sally"

2 Students "mariam"

2 Students "yousef"

2 Students "Ibrahim"

22 Students different name

ⓐ 14 Students

Ahmed, Sally, mariam, yousef, Ibrahim

Solution ⟹ Permutation $= \frac{n!}{(n-r)!} = \frac{14!}{(14-5)!} = 240$ 240

ⓑ 14 Students

2 Students (Ahmed, Sally, mariam, yousef, Ibrahim)

Solution ⟹ Combinations $= \frac{n!}{r!(n-r)!} = \frac{14!}{10!4!} = 1001$